

TECHNOLOGY FOR ROBOTIC SYSTEMS ENTERING REAL ENVIRONMENTS



APPLICATIONS

Robotic Arms
Humanoids and Legged Robots
Wearable Robotic Devices
Industrial Automation
Rehabilitation Devices
Human Robot Interaction
Haptics and Teleoperation

**Wherever Torque Controlled
Actuation Matters!**



MAIN FEATURES

- + Integrated Dual-Core Signal Processor and Power Electronics
- + High resolution Current, Position and Torque Measurements
- + Compact, Impact Resilient Design with High Power Density
- + Modular Assembly and Customizability
- + Broad Torque, Velocity and Compliance Ranges
- + Real-Time EtherCAT Communication
- + Control Modes: Current, Torque, Impedance, Position

CONTACTS

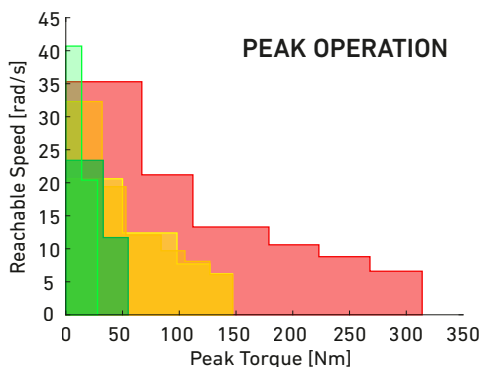
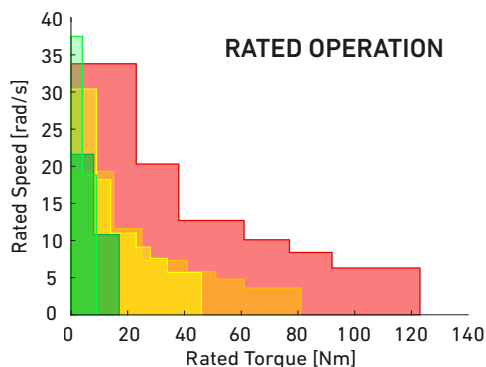
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SPEEDS & TORQUES

		TRANSMISSION RATIO	30	50	80	100	120	160
ACTUATOR	POMEGRANATE	Rated Speed [rad/s]	33.8	20.3	12.7	10.1	8.4	6.3
		Reachable Speed* [rad/s]	35.3	21.2	13.3	10.6	8.8	6.6
		Rated Torque [Nm]	23	38	61	77	92	123
		Peak Torque [Nm]	67	112	179	223	268	314
	ORANGE	Rated Speed [rad/s]	19.3	11.6	7.3	5.8	4.8	3.6
		Reachable Speed* [rad/s]	20.6	12.4	7.7	6.2	5.2	3.9
		Rated Torque [Nm]	15	25	41	51	61	81
		Peak Torque [Nm]	50	98	127	147	147	147
	LEMON	Rated Speed [rad/s]	30.4	18.2	11.4	9.1	7.6	5.7
		Reachable Speed* [rad/s]	32.3	19.4	12.1	9.7	8.1	6.1
		Rated Torque [Nm]	9	14	23	28	34	46
		Peak Torque [Nm]	32	53	84	105	127	147
	AVOCADO	Rated Speed [rad/s]		21.6		10.8		
		Reachable Speed* [rad/s]		23.4		11.7		
		Rated Torque [Nm]		8		17		
		Peak Torque [Nm]		33		55		
	LIME	Rated Speed [rad/s]		37.5		18.8		
		Reachable Speed* [rad/s]		40.7		20.4		
		Rated Torque [Nm]		4		9		
		Peak Torque [Nm]		14		28		

* The reachable speed is defined as the maximum speed attained within one full gear output rotation when accelerating the actuator inertia with peak torque.





POMEGRANATE



LEMON



ORANGE



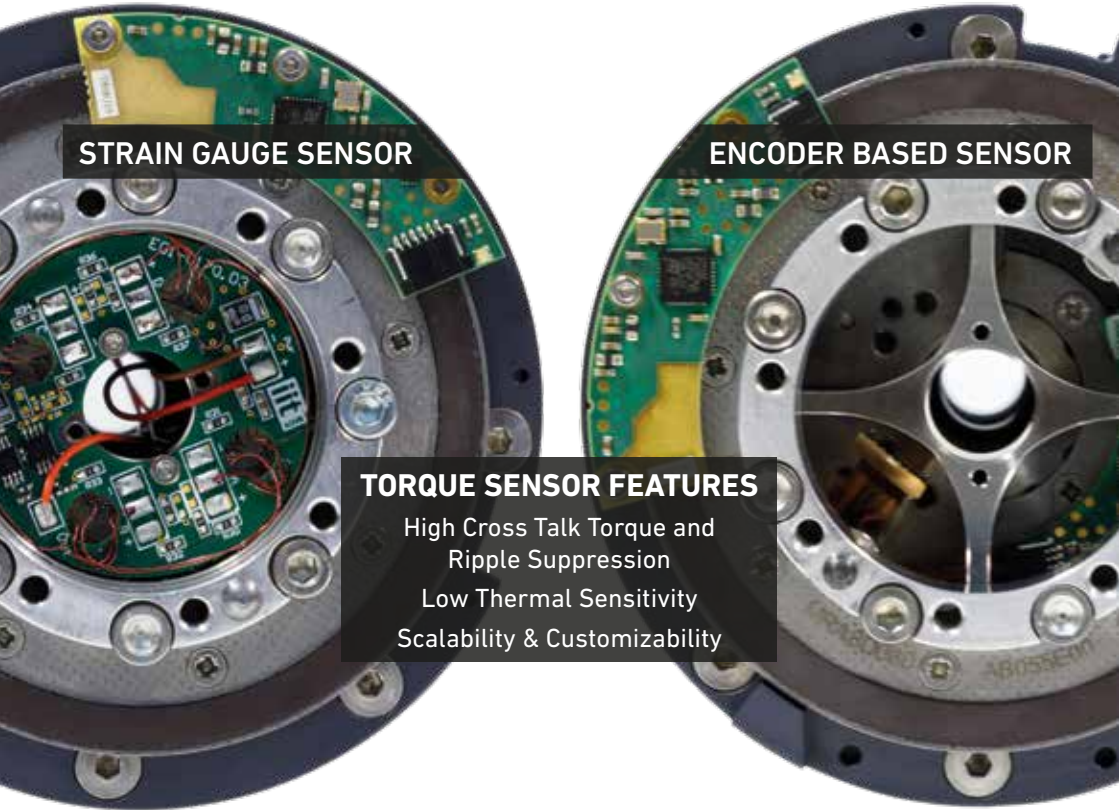
LIME



AVOCADO

	MASS & DIMENSIONS					POWER @ 48 V					
	Mass [kg]	Inertia** [10 ⁻⁵ kgm ²]	Length [mm]	Diameter [mm]	Volume [10 ⁵ mm ³]	Rated [W]	Rated Density [W/kg]	Peak [W]	Peak Density [W/kg]	Rated Current [A]	Peak Current [A]
POMEGRANATE	1.73	8.63	166	98	7.6	778	450	2096	1212	24.4	62.0
ORANGE	1.45	4.71	163	93	6.5	295	203	1014	699	9.3	33.9
LEMON	1.28	3.01	150	93	6.1	259	203	820	640	8.3	26.9
AVOCADO	1.00	1.48	127	82	3.8	179	179	556	556	5.8	20.0
LIME	0.87	1.18	120	82	3.6	167	192	518	518	5.4	15.0

** Inertia values are given with respect to the gearbox input (high speed slide).



ACTUATOR	STRAIN GAUGE TORQUE SENSOR			ENCODER BASED TORQUE SENSOR		
	Stiffness [kNm/rad]	Torque Sensing Resolution [Nm]	Torque Capacity [Nm]	Stiffness [kNm/rad]	Torque Sensing Resolution [Nm]	Torque Capacity [Nm]
POMEGRANATE	43	0.20	350	9	0.10	350
ORANGE	43	0.10	150	6	0.07	150
LEMON	43	0.10	150	6	0.07	150
AVOCADO	21	0.07	110			
LIME	21	0.07	110			

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